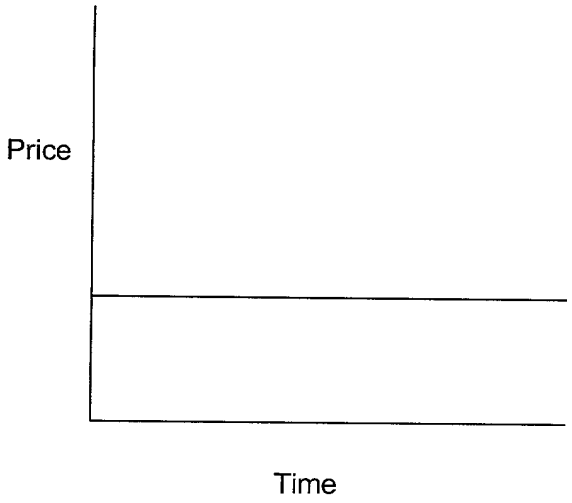


Fig. 1A

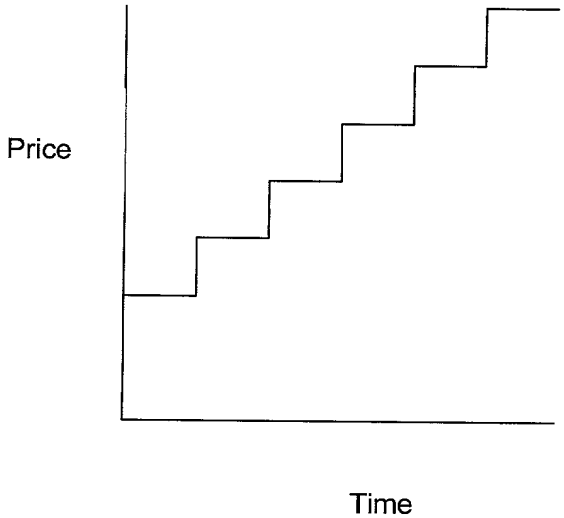


Fig. 1B

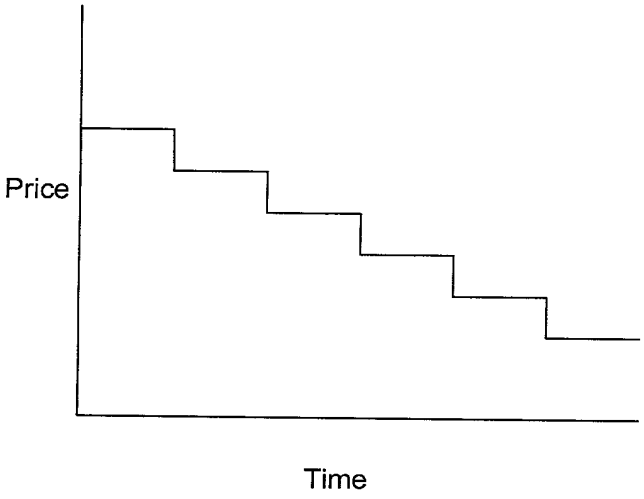


Fig. 1C

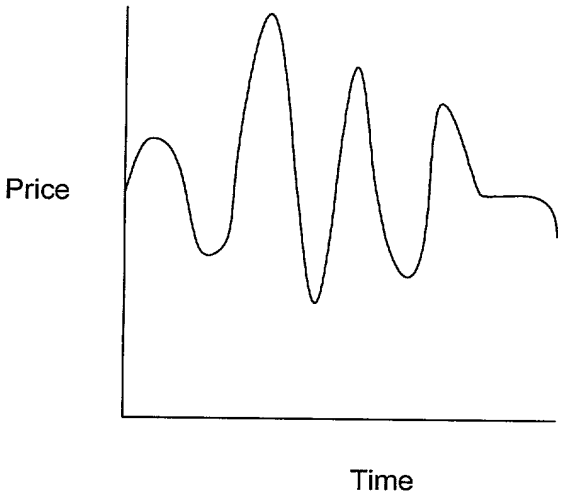


Fig. 1D

T06T20"3654E260

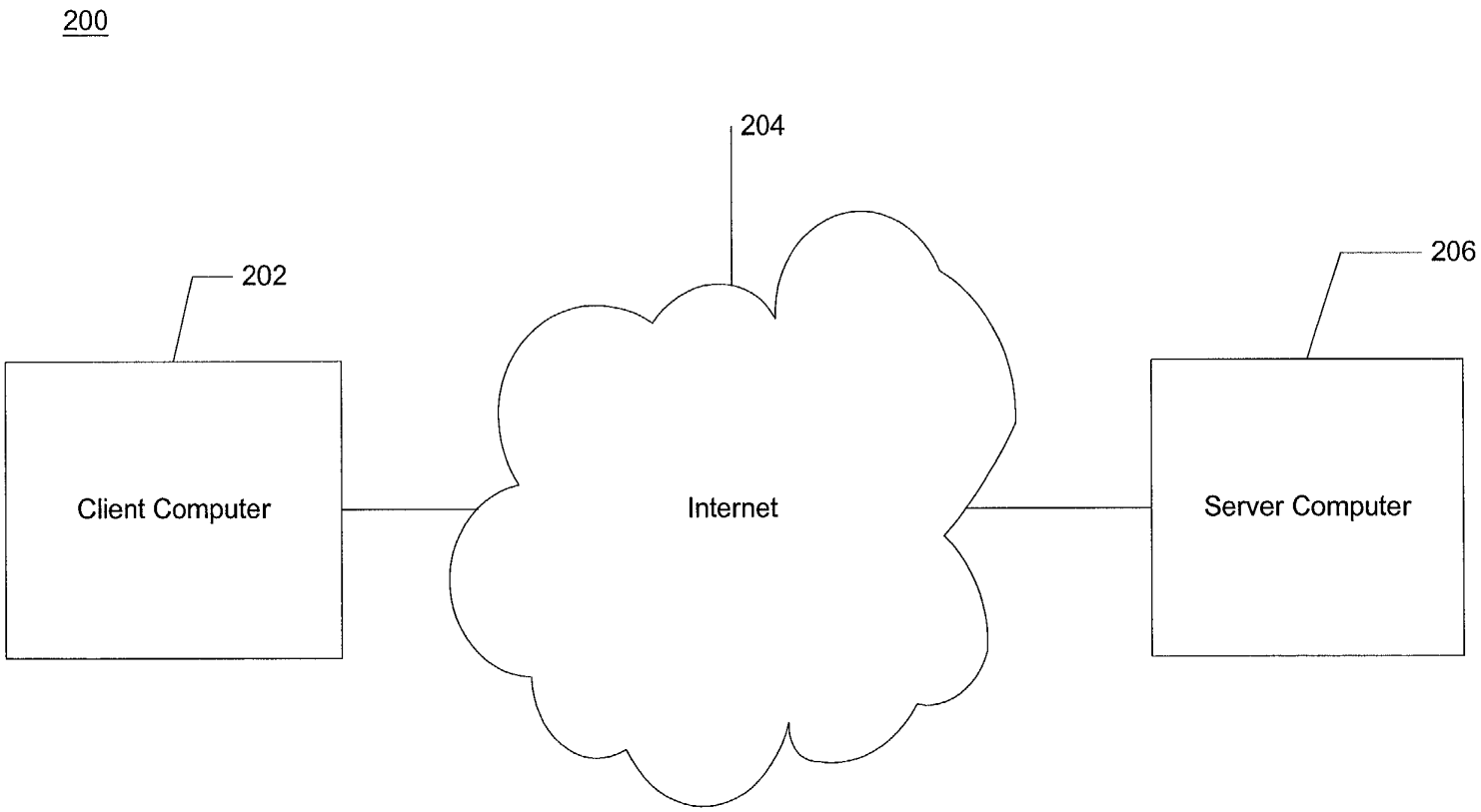


Fig. 2

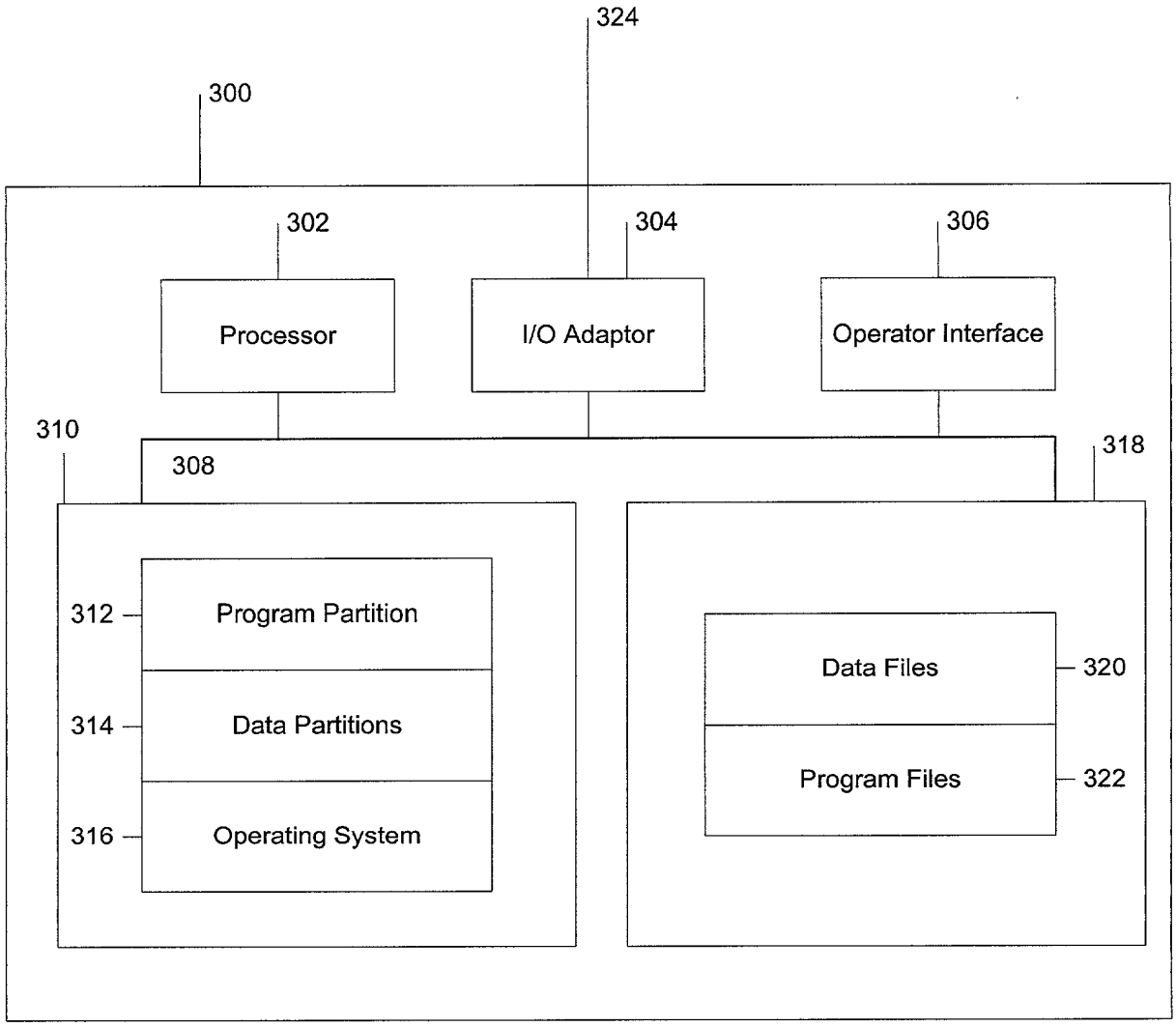

324
300
302
304
306
Processor
I/O Adaptor
Operator Interface
310
308
318
312
Program Partition
314
Data Partitions
316
Operating System
Data Files
320
Program Files
322

Fig. 3

TD6T20 "96522260

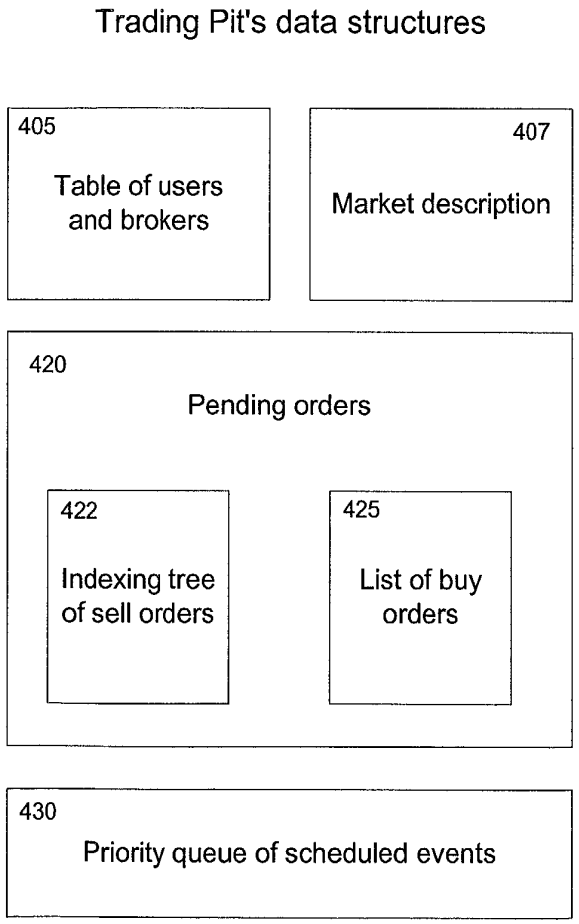


Fig. 4A

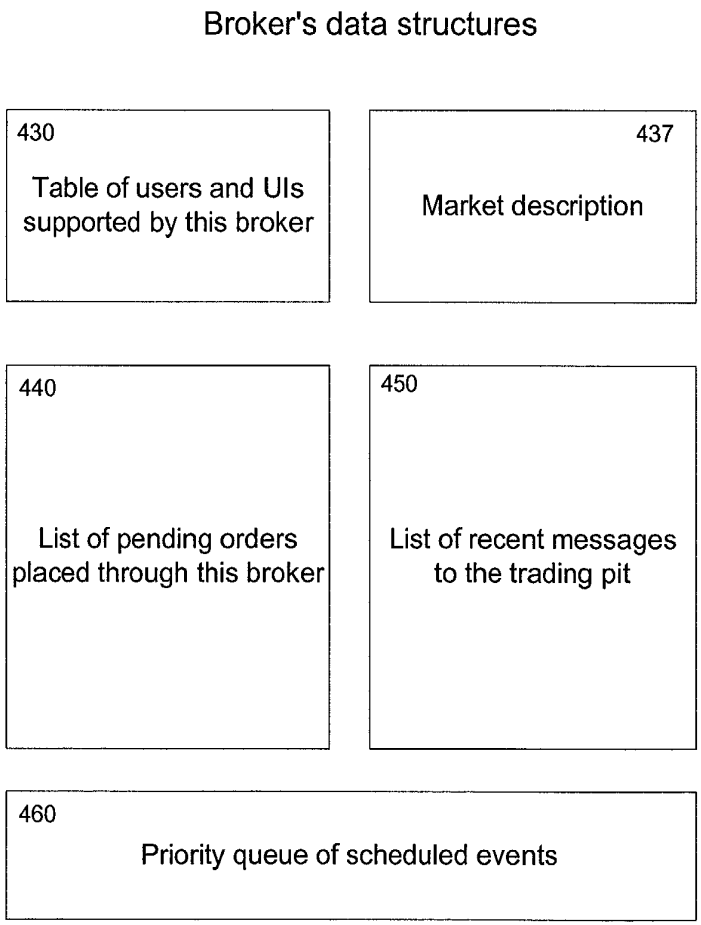


Fig. 4B

TOGT20 "S6S7E760

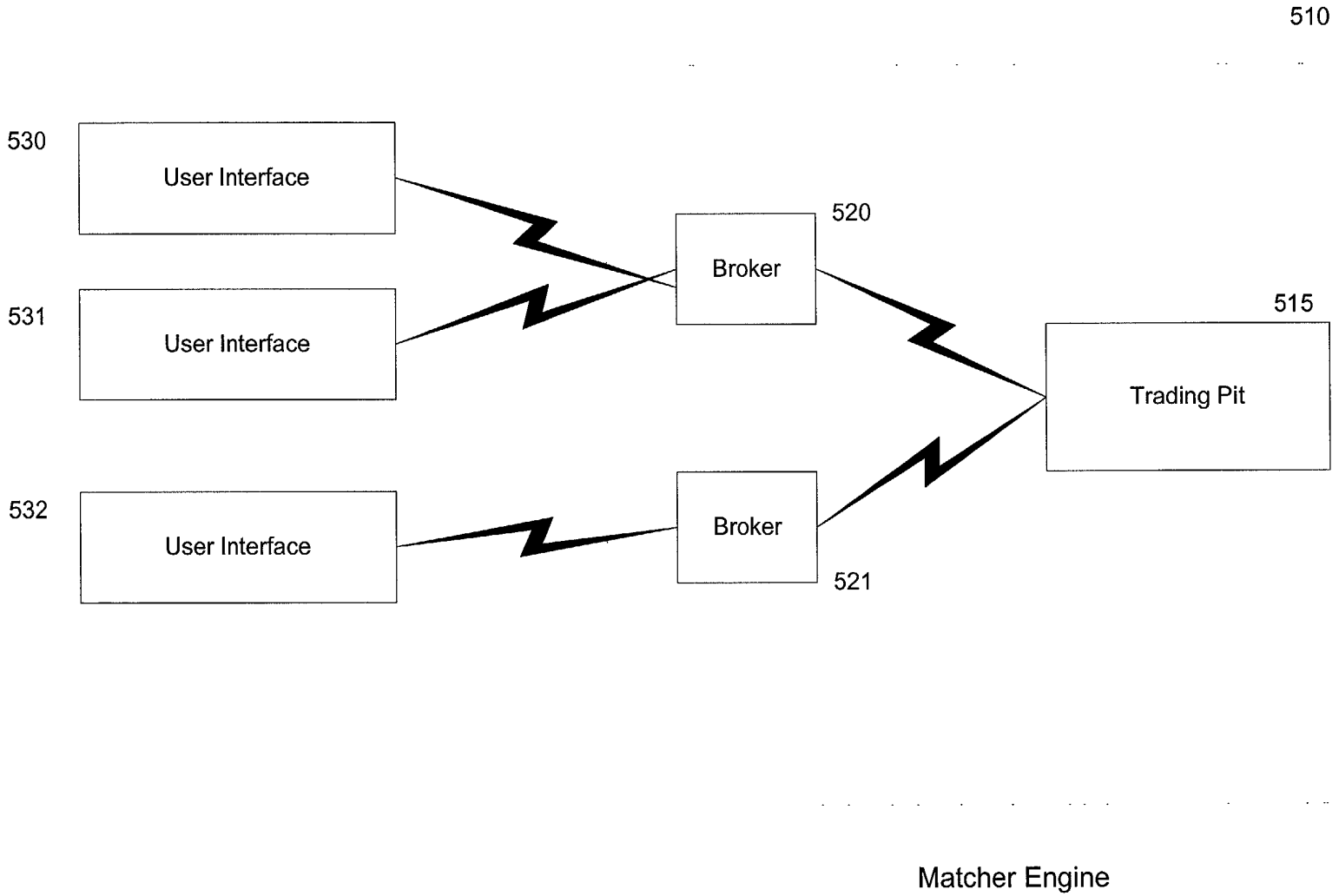


Fig. 5

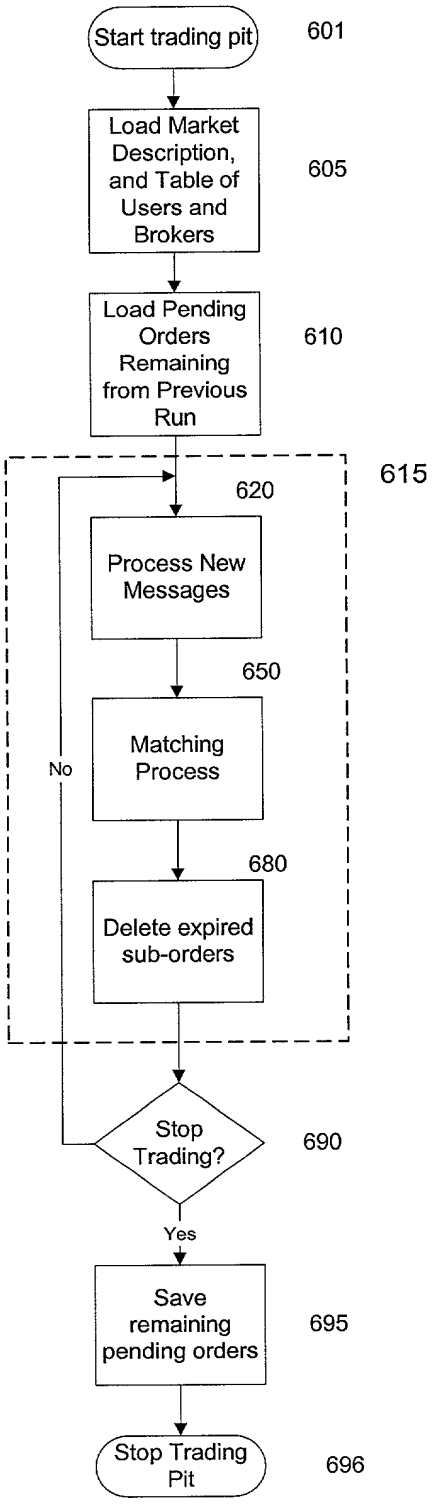

Start trading pit
601
Load Market Description, and Table of Users and Brokers
605
Load Pending Orders Remaining from Previous Run
610
615
620
Process New Messages
650
Matching Process
No
680
Delete expired sub-orders
Stop Trading?
690
Yes
Save remaining pending orders
695
Stop Trading Pit
696

Fig. 6

Fig. 7

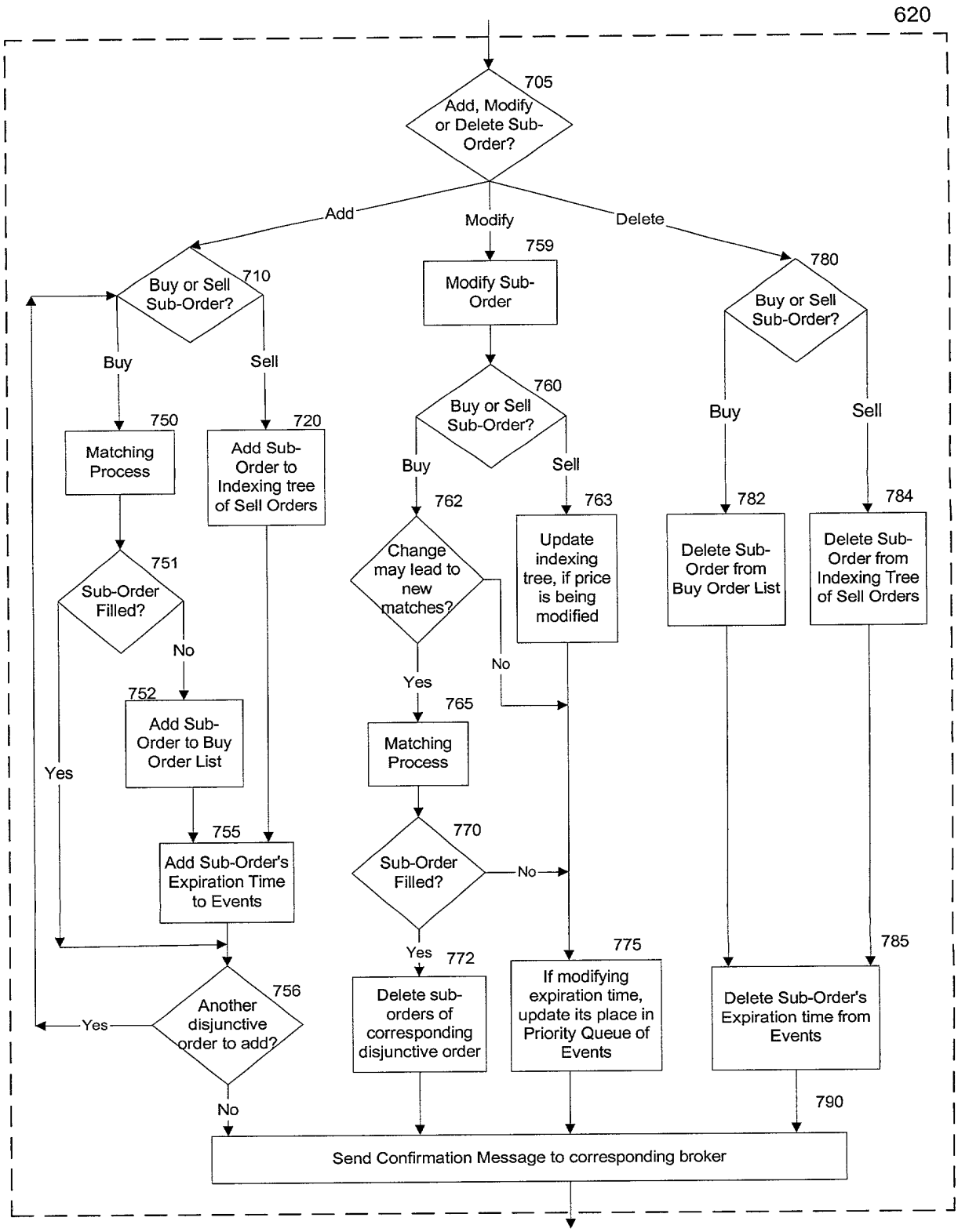
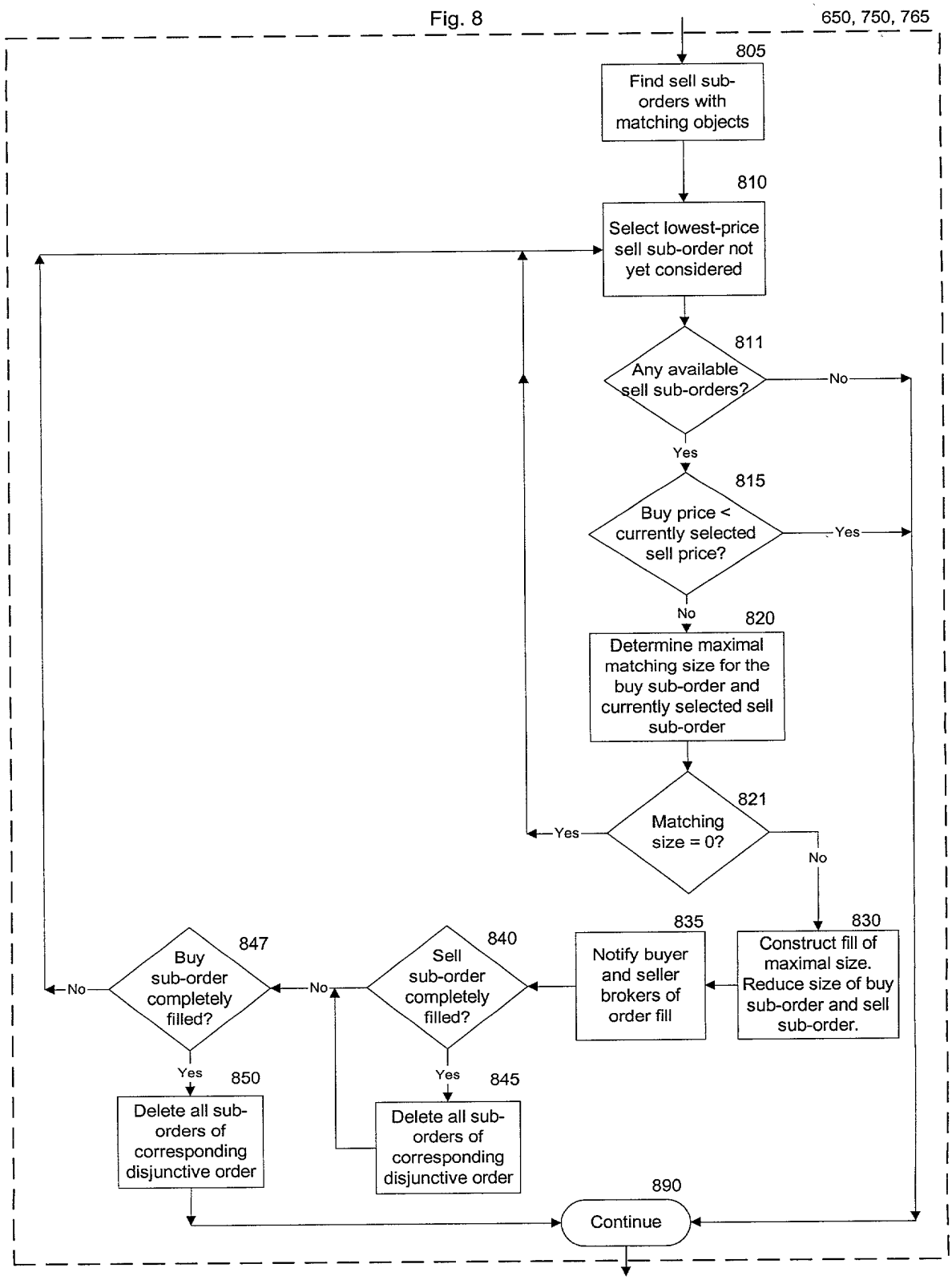

620
705
Add, Modify or Delete Sub-Order?
Add
Modify
Delete
710
Buy or Sell Sub-Order?
Buy
Sell
750
Matching Process
720
Add Sub-Order to Indexing tree of Sell Orders
751
Sub-Order Filled?
No
752
Add Sub-Order to Buy Order List
Yes
755
Add Sub-Order's Expiration Time to Events
756
Another disjunctive order to add?
Yes
No
759
Modify Sub-Order
760
Buy or Sell Sub-Order?
Buy
Sell
762
Change may lead to new matches?
Yes
No
765
Matching Process
770
Sub-Order Filled?
No
Yes
772
Delete sub-orders of corresponding disjunctive order
763
Update indexing tree, if price is being modified
775
If modifying expiration time, update its place in Priority Queue of Events
780
Buy or Sell Sub-Order?
Buy
Sell
782
Delete Sub-Order from Buy Order List
784
Delete Sub-Order from Indexing Tree of Sell Orders
785
Delete Sub-Order's Expiration time from Events
790
Send Confirmation Message to corresponding broker

Fig. 8


650, 750, 765
805
Find sell sub-orders with matching objects
810
Select lowest-price sell sub-order not yet considered
811
Any available sell sub-orders?
No
Yes
815
Buy price < currently selected sell price?
Yes
No
820
Determine maximal matching size for the buy sub-order and currently selected sell sub-order
821
Matching size = 0?
Yes
No
830
Construct fill of maximal size. Reduce size of buy sub-order and sell sub-order.
835
Notify buyer and seller brokers of order fill
840
Sell sub-order completely filled?
No
Yes
845
Delete all sub-orders of corresponding disjunctive order
847
Buy sub-order completely filled?
No
Yes
850
Delete all sub-orders of corresponding disjunctive order
890
Continue

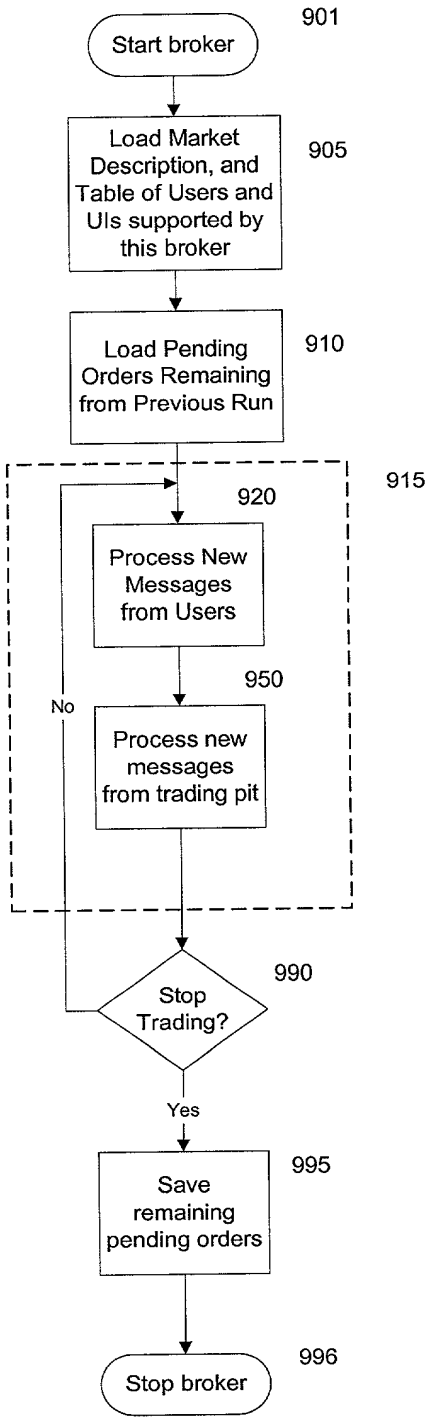

901
Start broker
905
Load Market Description, and Table of Users and UIs supported by this broker
910
Load Pending Orders Remaining from Previous Run
915
920
Process New Messages from Users
950
Process new messages from trading pit
No
990
Stop Trading?
Yes
995
Save remaining pending orders
996
Stop broker

Fig. 9

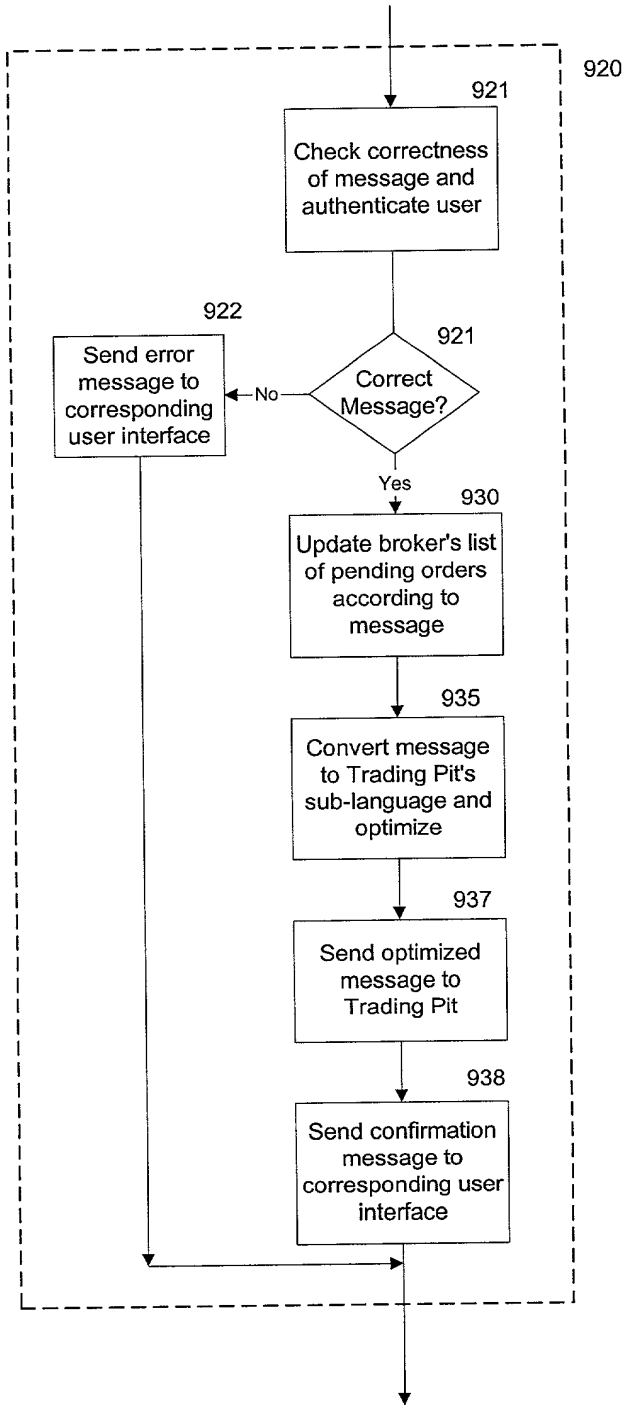

920
921
Check correctness of message and authenticate user
922
Send error message to corresponding user interface
No
921
Correct Message?
Yes
930
Update broker's list of pending orders according to message
935
Convert message to Trading Pit's sub-language and optimize
937
Send optimized message to Trading Pit
938
Send confirmation message to corresponding user interface

Fig. 10

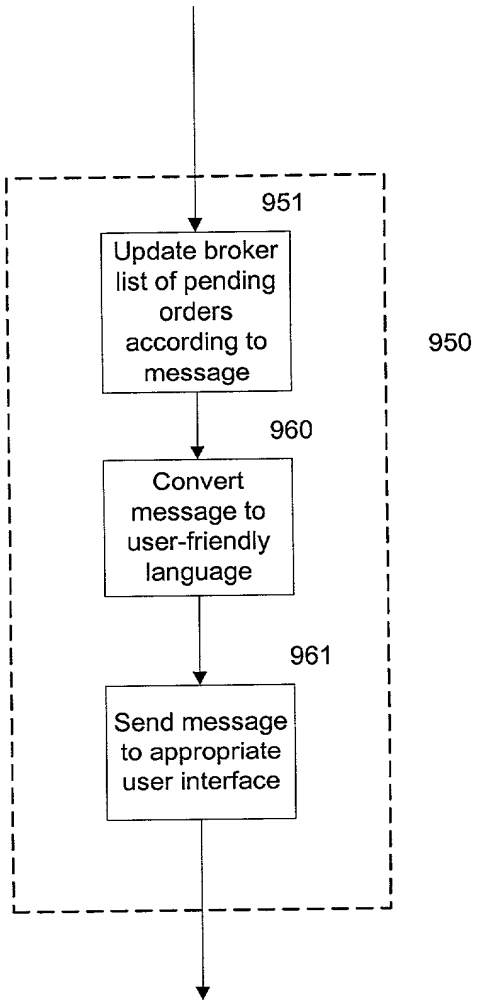
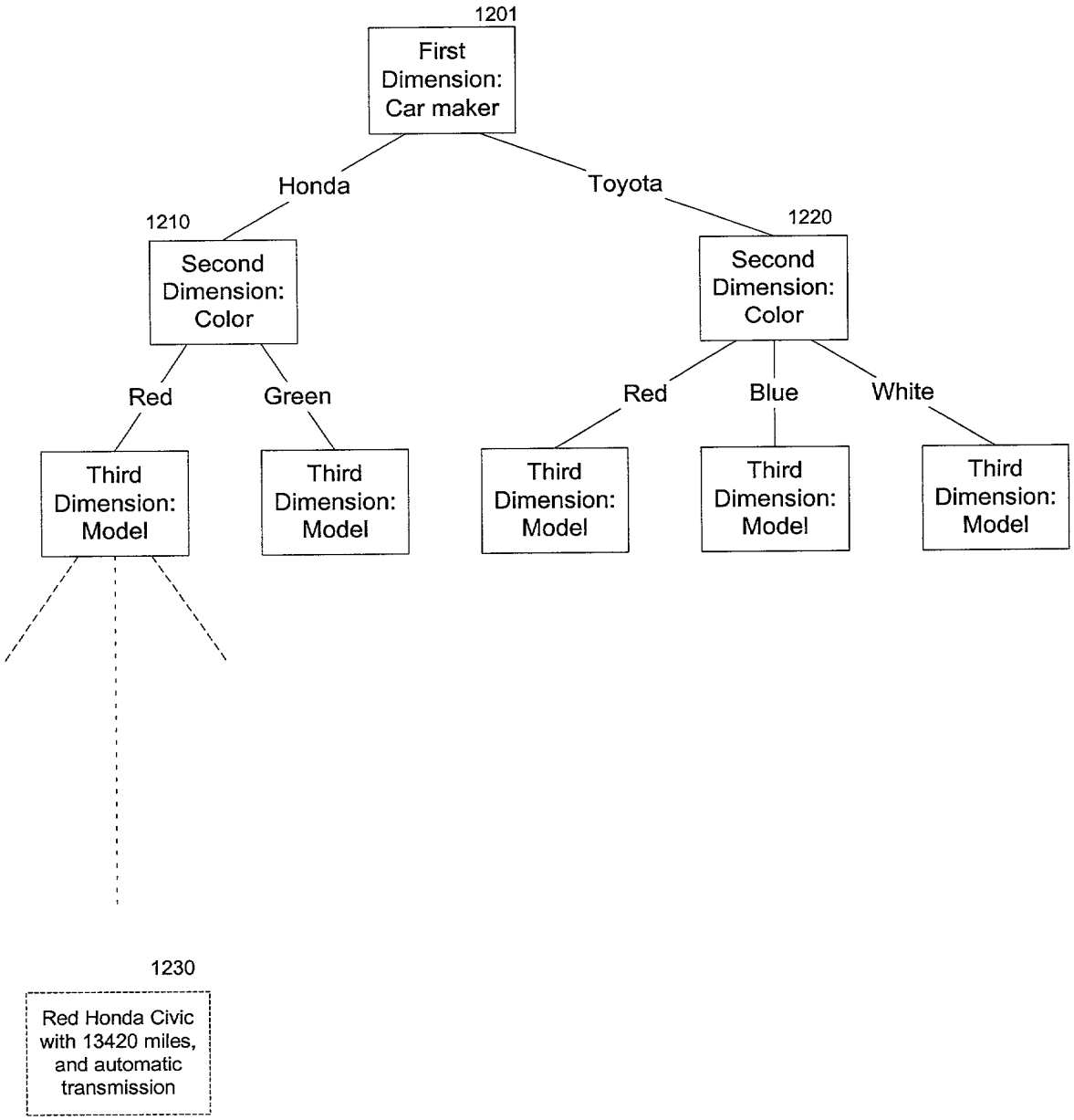

951
Update broker list of pending orders according to message
950
960
Convert message to user-friendly language
961
Send message to appropriate user interface

Fig. 11

Fig. 12


1201
First Dimension: Car maker
Honda
Toyota
1210
Second Dimension: Color
1220
Second Dimension: Color
Red
Green
Red
Blue
White
Third Dimension: Model
Third Dimension: Model
Third Dimension: Model
Third Dimension: Model
Third Dimension: Model
1230
Red Honda Civic with 13420 miles, and automatic transmission